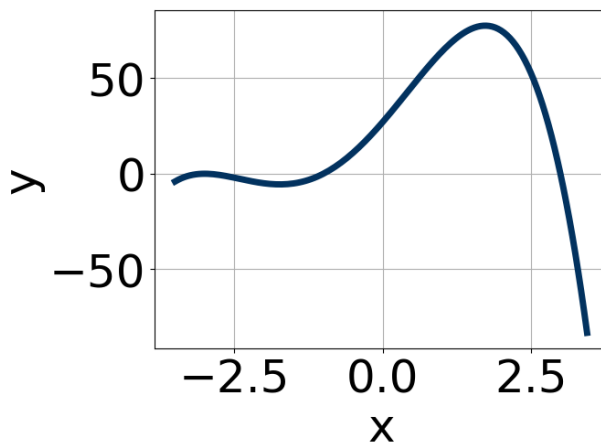


1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$-3 - 2i \text{ and } -3$$

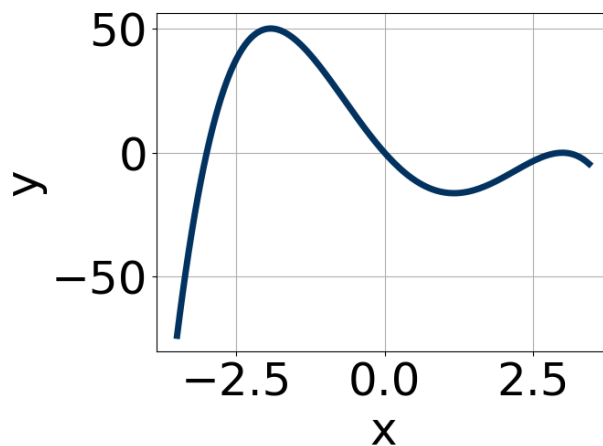
- A. $b \in [-5, 3], c \in [5.4, 6.45], \text{ and } d \in [7.9, 9.4]$
 B. $b \in [-5, 3], c \in [4.58, 5.53], \text{ and } d \in [1.9, 7.1]$
 C. $b \in [2, 13], c \in [30.15, 31.6], \text{ and } d \in [38.1, 39.8]$
 D. $b \in [-17, -6], c \in [30.15, 31.6], \text{ and } d \in [-42, -38.7]$
 E. None of the above.

2. Which of the following equations *could* be of the graph presented below?



- A. $-15(x + 3)^{10}(x - 3)^7(x + 1)^{11}$
 B. $-9(x + 3)^{11}(x - 3)^8(x + 1)^9$
 C. $-7(x + 3)^{10}(x - 3)^6(x + 1)^7$
 D. $5(x + 3)^{10}(x - 3)^5(x + 1)^4$
 E. $7(x + 3)^6(x - 3)^5(x + 1)^5$

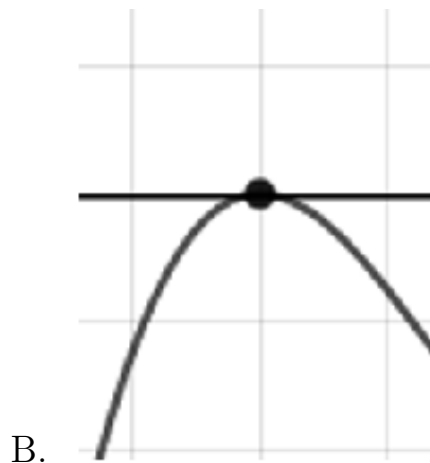
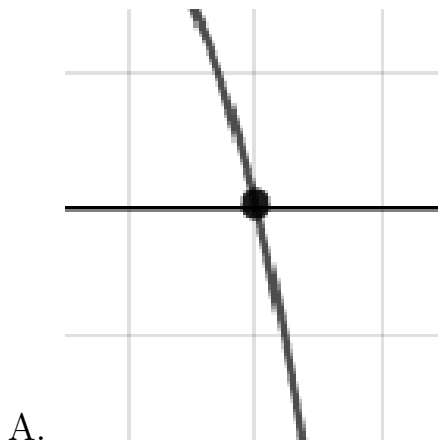
3. Which of the following equations *could* be of the graph presented below?



- A. $10x^7(x-3)^4(x+3)^{10}$
- B. $15x^{11}(x-3)^6(x+3)^5$
- C. $-20x^6(x-3)^9(x+3)^7$
- D. $-7x^7(x-3)^8(x+3)^5$
- E. $-18x^4(x-3)^4(x+3)^5$

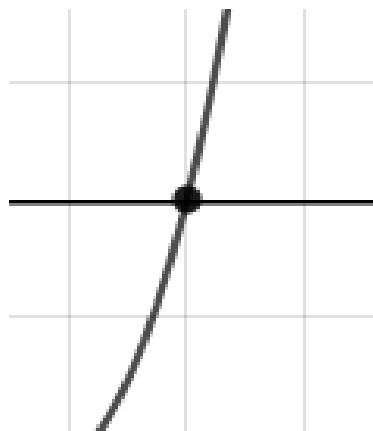
4. Describe the zero behavior of the zero $x = 4$ of the polynomial below.

$$f(x) = 2(x+6)^8(x-6)^4(x-4)^{10}(x+4)^7$$





C.



D.

E. None of the above.

5. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$2 + 3i \text{ and } 3$$

- A. $b \in [4, 11], c \in [21.54, 25.63],$ and $d \in [33, 43]$
 B. $b \in [-3, 5], c \in [-5.17, -2.87],$ and $d \in [0, 7]$
 C. $b \in [-3, 5], c \in [-6.83, -5.89],$ and $d \in [9, 10]$
 D. $b \in [-9, -4], c \in [21.54, 25.63],$ and $d \in [-46, -38]$
 E. None of the above.

6. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{3}{5}, \frac{-1}{3}, \text{ and } \frac{-1}{2}$$

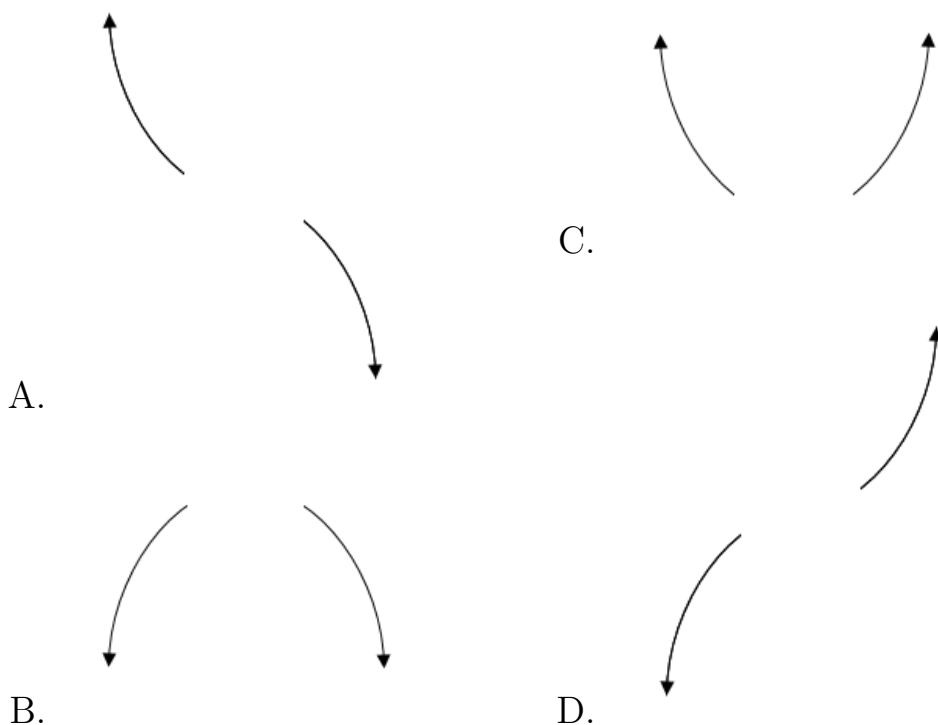
- A. $a \in [30, 39], b \in [-13, -1], c \in [-13, -6],$ and $d \in [-1, 7]$
 B. $a \in [30, 39], b \in [40, 44], c \in [18, 24],$ and $d \in [-1, 7]$
 C. $a \in [30, 39], b \in [22, 27], c \in [-2, 0],$ and $d \in [-3, -2]$

D. $a \in [30, 39], b \in [7, 13], c \in [-13, -6],$ and $d \in [-1, 7]$

E. $a \in [30, 39], b \in [7, 13], c \in [-13, -6],$ and $d \in [-3, -2]$

7. Describe the end behavior of the polynomial below.

$$f(x) = -7(x - 9)^5(x + 9)^8(x + 4)^5(x - 4)^7$$



E. None of the above.

8. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{-6}{5}, \frac{3}{5}, \text{ and } \frac{7}{2}$$

A. $a \in [48, 54], b \in [-154, -139], c \in [-141, -135],$ and $d \in [-128, -118]$

B. $a \in [48, 54], b \in [-206, -201], c \in [67, 73],$ and $d \in [125, 132]$

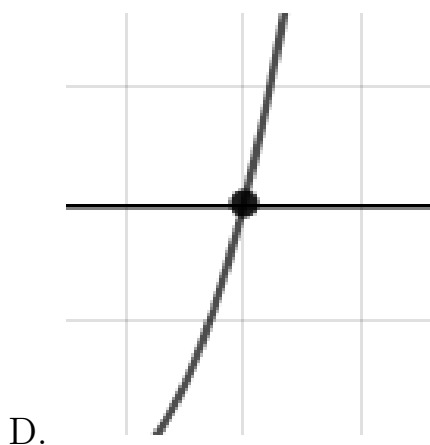
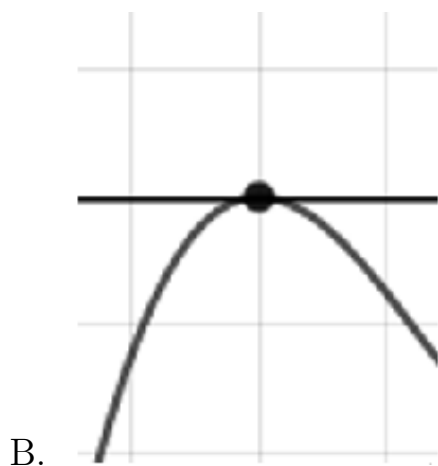
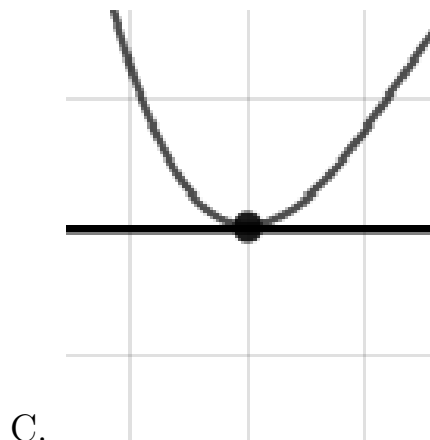
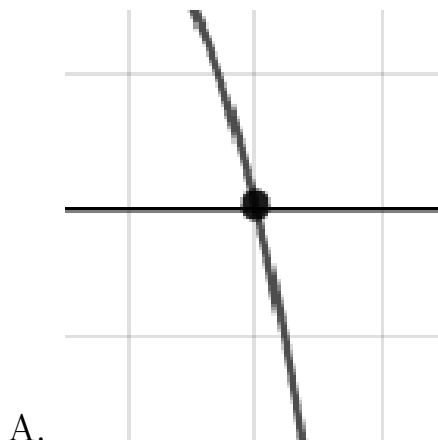
C. $a \in [48, 54], b \in [-267, -261], c \in [350, 357],$ and $d \in [-128, -118]$

D. $a \in [48, 54]$, $b \in [142, 152]$, $c \in [-141, -135]$, and $d \in [-128, -118]$

E. $a \in [48, 54]$, $b \in [-154, -139]$, $c \in [-141, -135]$, and $d \in [125, 132]$

9. Describe the zero behavior of the zero $x = 5$ of the polynomial below.

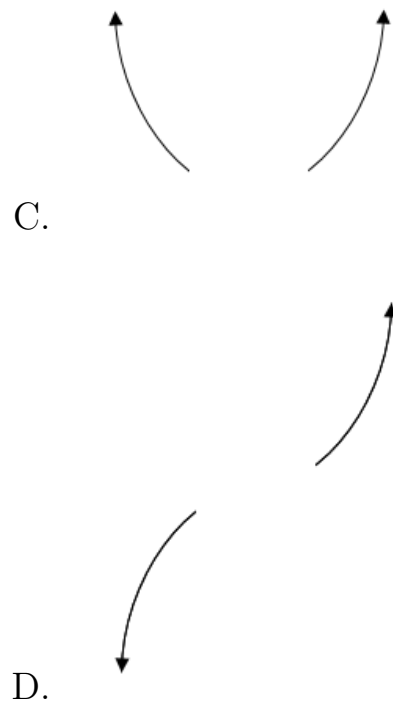
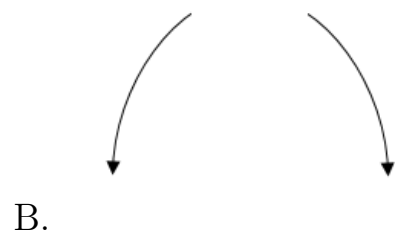
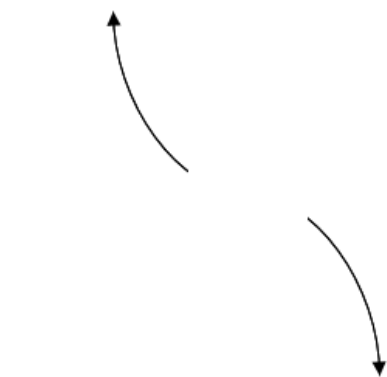
$$f(x) = -7(x - 3)^6(x + 3)^3(x - 5)^{10}(x + 5)^7$$



E. None of the above.

10. Describe the end behavior of the polynomial below.

$$f(x) = -8(x + 3)^4(x - 3)^5(x + 7)^3(x - 7)^5$$



E. None of the above.